

Section-A

Multiple Choice Questions (MCQ's)

M.marks: 17

Time: 15 Minutes

Q.1 Choose the correct answer for each from the given options:

- (i) The founder of Algebra, a famous muslim scientist born in 780 A.D was _____.
(a) Al-Khwarizmi (b) Al-Kindi (c) Al-Beruni
(d) Naseeruddin Tusi
- (ii) One metre is equal to _____ nanometre.
(a) 10^3 (b) 10^6 (c) 10^9 (d) 10^{12}
- (iii) _____ is a scalar quantity.
(a) Displacement (b) Force (c) Speed (d) Velocity
- (iv) If the velocity of moving body decreases by equal amounts in equal interval of time, how small they may be, the body is said to have _____ acceleration.
(a) Zero (b) Uniform and Positive (c) Uniform and Negative
(d) None of these
- (v) If the force acting on a body is double, then the acceleration produced is _____.
(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) double (d) quadrupled
- (vi) If a stone is tied to the end of string and whirled in a circle, the tension in the string provides _____.
(a) Centripetal Force (b) Centrifugal Force (c) Pressure (d) Reaction
- (vii) Energy possessed by a body by virtue of its motion is called _____ energy.
(a) Potential (b) Electrical (c) Chemical (d) Kinetic
- (viii) If the fulcrum of a lever is between the effort and resistance, it is a _____ class lever.
(a) First (b) Second (c) Third (d) None of these
- (ix) The S.I unit of pressure is _____.
(a) Pascal (b) Newton (c) Kilogram per cube metre
(d) Newton metre
- (x) The molecules of a solid _____.
(a) Move about haphazardly (b) Remain stationary
(c) Vibrate (d) None of these
- (xi) If the frequency of waves $f = 30$ cycles per second and wave length $\lambda = 0.2$ metre, then the velocity of wave is _____.
(a) 6 ms^{-1} (b) 150 ms^{-1} (c) 0.0066 ms^{-1} (d) 6 ms^{-1}
- (xii) The pupil of eye controls _____.
(a) The focal length of the eye (b) The range of accommodation of eye
(c) The distance of distinct vision (d) The amount of light reaching the eye
- (xiii) Electromagnetic waves carry _____.
(a) Wave length (b) Frequency (c) Charge (d) Energy
- (xiv) The commercial unit of electric energy is known as _____.
(a) Ohm (b) Volt (c) Kilowatt hour (d) None of these
- (xv) To measure current in a circuit an ammeter is always connected _____.
(a) In series (b) In parallel (c) In any way (d) Parallel to voltmeter
- (xvi) The materials in which electric current can flow easily due to their low resistance are called _____.
(a) Insulators (b) Semi conductors
(c) Conductors (d) None of these
- (xvii) The emission of rays from the nucleus is called _____.
(a) Chemical process (b) Atomic process
(c) Radio activity (d) Atomic dispersion

Section-B

(Short Answers)

Note: Write short answer any "EIGHT" of the following question. Each question carries 5 marks.

- Q.2 What is the importance of standard units in every day life?
- Q.3 Define Scalar and Vector quantities. Give five examples of each.
- Q.4 Derive equation: $S = Vt + \frac{1}{2}at^2$
- Q.5 State Newton's First Law of Motion, giving example from every day life.
- Q.6 Define Torque, what are the factors on which it depends?
- Q.7 An object of mass 3 kg is moving on a rough surface with a velocity of 16 m/s. It covers a distance of a of 20 m before coming to rest. Find the opposing force.
- Q.8 Define Kinetic Energy, derive an expression for the Kinetic Energy of a body in motion.
- Q.9 What is an inclined plane? Determine the mechanical advantage of an inclined plane.
- Q.10 Convert 5°F to its equivalent temperature on Celsius and Kelvin Scales.
- Q.11 What is the difference between a real and virtual image?
- Q.12 State Coulomb's Law and define the unit of charge.
- Q.13 Explain what is meant by magnetic field?

Section-C

(Descriptive)

Note: Attempt any TWO of the following questions in detail. Each question carries 14 marks.

- Q.14 (a) Derive an equation for the mass of the earth by applying law of gravitation.
(b) A series circuit consisting of three resistors having 40 ohms, 50 ohms and 20 ohms respectively, is connected across a voltage source of 120 V. Find the current in the circuit and potential difference across each resistor.
- Q.15 (a) Define stress, strain, Hooke's law and young's modulus.
(b) An auto mobile is running on a circular high way with a velocity of 120 m/s. The radius of the high way is 1000 m. What is the centripetal acceleration.
- Q.16 (a) Describe the construction and working of compound microscope.
(b) An exit ramp on a major free way is 200 m long and upper end is 10 m above the high way. Determine the effort required to move a truck with trailer whose mass is 2000 kg, to the end of ramp.